17. A device for dispensing fluid, the device comprising:
a housing;
a pump enclosed in the housing; and
a dispensing assembly downstream of and in fluid communication with the pump, the dispensing assembly comprising:
a dispensing chamber; and
a sensor for quantitatively measuring a parameter related to a volume of the dispensing chamber, wherein the pump ejects fluid so as to cyclically pump fluid into the dispensing chamber and delivery fluid from the dispensing chamber through an exit; and
an acoustic energy source for acoustically exciting gas in an acoustically contiguous region to produce an acoustic response therein, the region comprising a subregion coupled to the dispensing chamber wherein a change in volume of the dispensing chamber causes a change in volume of the subregion;
a first acoustic transducer mounted at a first position in the acoustically contiguous region for producing an electrical signal based on the acoustic response; and
a processor coupled to the first acoustic transducer and to a reference and implements a flow determination process for determining a quantity related to change of volume of the subregion based on the acoustic response.

18. A device according to claim **17**, wherein the wherein the pump comprising:
a pumping chamber comprising:
an inlet in fluid communication with a reservoir; and
a pump outlet; and
a pump assembly adapted to pump fluid from the reservoir and into the pumping chamber and from the pumping chamber and to the dispensing chamber, the pump assembling comprising:
a pump actuator; and
a motor.

19. A device according to claim **19**, wherein the motor comprising a shape-memory actuator.

20. A device according to claim **19**, wherein the motor comprising at least one fold in the shape-memory actuator.

* * * * *